

LOW POWER CURRENT INPUT DELTA-SIGMA ADC USING INJECTION FET REFERENCE

ABSTRACT OF THE DISCLOSURE

A low power delta-sigma analog to digital converter 10 for converting current mode signals without an amplifier includes an integration capacitor 26, a comparator 30, and a first switch 24 in parallel with one another and coupled to an integration node 28. A FET 20 and the first switch are disposed in series between a dump capacitor 25 and the integration node. A second switch 27 operates to discharge the dump capacitor, and an output of the comparator controls both switches in opposition. Preferably, no op-amps are included in the circuit, and current is supplied by an imaging component 5. In a first comparator state, the first capacitor charges, the first switch is open and the second switch is closed, and the dump capacitor discharges. In a comparator second state, the first switch is closed and the second switch is open, and the integration capacitor transfers a fixed amount of charge into the dump capacitor through an injection FET operating in saturation .